

# Curriculum Vitae

## Alexander Rossi Miller

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Residence    United States of America

### Positions Held

- 2017–2020    Member, University of Vienna, Austria
- 2017         Visiting Scholar, Institut Henri Poincaré, Paris, France
- 2014–2017   J. L. Doob Research Assistant Professor, University of Illinois, USA

### Education

- 2013         Ph.D. in Mathematics, University of Minnesota, USA
- 2007         B.S. in Mathematics, University of Minnesota, USA

### Research Interests

Combinatorics, representation theory, and algebra. In particular: algebraic and topological aspects of combinatorics; real and complex reflection groups; combinatorial representation theory.

### Preprints

- 2021    18.    **On Foulkes characters**  
Alexander R. Miller  
*Mathematische Annalen*, to appear
- 2021    17.    **The sparsity of character tables of high rank groups of Lie type**  
Michael J. Larsen and Alexander R. Miller  
*Representation Theory* **25** (2021) 173–192
- 2020    16.    **On roots of unity and character values**  
Alexander R. Miller  
*Submitted*
- 2020    15.    **Many zeros of many characters of  $GL(n, q)$**   
Patrick X. Gallagher, Michael J. Larsen, and Alexander R. Miller  
*International Mathematics Research Notices (IMRN)*, to appear

- 2019 14. **Congruences in character tables of symmetric groups**  
Alexander R. Miller  
*Submitted*

## **Publications**

- 2019 13. **Dense proportions of zeros in character values**  
Alexander R. Miller  
*C. R. Math. Acad. Sci. Paris* **357** (2019) 771–772
- 2019 12. **Character restrictions and reflection groups**  
Eugenio Giannelli and Alexander R. Miller  
*Journal of Algebra* **531** (2019) 336–348
- 2019 11. **On parity and characters of symmetric groups**  
Alexander R. Miller  
*Journal of Combinatorial Theory Series A* **162** (2019) 231–240
- 2018 10. **Walls in Milnor fiber complexes**  
Alexander R. Miller  
*Documenta Mathematica* **23** (2018) 1247–1261
- 2018 9. **Orthogonal polynomials and Smith normal form**  
Alexander R. Miller and Dennis Stanton  
*Monatshefte für Mathematik* **187** (2018) 125–145
- 2017 8. **Some characters that depend only on length**  
Alexander R. Miller  
*Mathematical Research Letters* **24** (2017) 879–891
- 2015 7. **Eigenspace arrangements of reflection groups**  
Alexander R. Miller  
*Transactions of the American Mathematical Society* **367** (2015) 8543–8578
- 2015 6. **Foulkes characters for complex reflection groups**  
Alexander R. Miller  
*Proceedings of the American Mathematical Society* **143** (2015) 3281–3293
- 2014 5. **The probability that a character value is zero for the symmetric group**  
Alexander R. Miller  
*Mathematische Zeitschrift* **277** (2014) 1011–1015
- 2014 4. **Reflection arrangements and ribbon representations**  
Alexander R. Miller  
*European Journal of Combinatorics* **39** (2014) 24–56  
(*Ph.D. Thesis*, 2013)
- 2013 3. **Differential posets have strict rank growth: a conjecture of Stanley**  
(Positively answers 25-year-old question of R. P. Stanley from 1988 in JAMS)  
Alexander R. Miller  
*Order* **30** (2013) 657–662

- 2011 2. **Note on 1-crossing partitions**  
M. Bergerson, A. Miller, A. Pliml, V. Reiner, P. Shearer, D. Stanton, N. Switala  
*Ars Combinatoria* **99** (2011) 83–87
- 2009 1. **Differential posets and Smith normal forms**  
Alexander R. Miller and Victor Reiner  
*Order* **26** (2009) 197–228

## Conference Proceedings

- 2018 1. **Milnor fiber complexes and some representations**  
Alexander R. Miller  
in “Topology of Arrangements and Representation Stability”, pp. 43–123,  
*Oberwolfach Reports* **15** (2018)

## Conferences and Lectures

- 2021 Mar Combinatorics Seminar, University of Southern California, Los Angeles, USA
- 2020 Feb Bern–Neuchâtel–Fribourg Intercity Seminar, Universität Bern, Switzerland
- 2019 Sep Austrian Mathematical Society Conference, Dornbirn, Austria
- 2019 Jan Combinatoire Énumérative et Analytic, Université Paris Diderot (Paris 7), France
- 2018 Nov Einstein Workshop on Algebraic Combinatorics, Freie Universität Berlin, Germany
- 2018 May Algebra & Representation Theory Seminar, University of Cambridge, UK
- 2018 Mar Séminaire Lotharingien de Combinatoire, Institut Camille Jordan, Lyon, France
- 2018 Mar Arbeitsgemeinschaft für Diskrete Mathematik, Technische Universität Wien, Austria
- 2018 Jan Topology of Arrangements and Representation Stability, Oberwolfach, Germany
- 2017 Dec Algebraic and Enumerative Combinatorics, SFB Statusseminar, Strobl, Austria
- 2017 Nov Algebra und Algebraischen Kombinatorik, Leibniz Universität Hannover, Germany
- 2017 Sep Séminaire Lotharingien de Combinatoire, Bertinoro, Italy
- 2017 May Midwest Combinatorics Conference, University of Minnesota, Twin Cities, USA
- 2015 Oct Enumerative Algebraic & Geometric Combinatorics, AMS Session, Chicago, USA
- 2013 Mar Algebraic Combinatorics, AMS Special Session, Oxford, USA
- 2012 Oct Combinatorics Seminar, University of Minnesota, Twin Cities, USA
- 2012 May Combinatorics Seminar, University of Minnesota, Twin Cities, USA
- 2010 Apr Combinatorial Representation Theory, AMS Special Session, St. Paul, USA
- 2009 Jan Algebraic Combinatorics Seminar, Fields Institute, Toronto, Canada
- 2008 Mar Combinatorics Seminar, University of Minnesota, Twin Cities, USA

## **Journals and Conferences Refereed**

2010–  
Advances in Applied Mathematics  
Algebraic Combinatorics  
Discrete and Computational Geometry  
Electronic Journal of Combinatorics  
Formal Power Series and Algebraic Combinatorics  
Journal of Algebraic Combinatorics  
Journal of Combinatorial Theory Series A  
Journal für die reine und angewandte Mathematik (Crelle's Journal)  
Order, a journal on the theory of ordered sets and its applications  
Proceedings of the American Mathematical Society  
SIAM Journal on Discrete Mathematics

## **Teaching Experience**

### **Courses taught at the University of Illinois (as postdoctoral instructor)**

2016 Fall Calculus III Honors (Math 241)  
2016 Fall Nonlinear Programming (Math 484)  
2016 Spg Conjugate Duality and Optimization (Math 589)  
2016 Spg Nonlinear Programming (Math 484)  
2015 Fall Nonlinear Programming (Math 484)  
2015 Spg Nonlinear Programming (Math 484)  
2014 Fall Fundamental Mathematics (Math 347)

### **Courses taught at the University of Minnesota**

2014 Spg Introduction to Modern Algebra (Math 4281)  
2013 Fall Calculus II (Math 1272)  
2013 Sum Applied Linear Algebra (Math 4242)  
2011 Fall Calculus II (Math 1272)  
2011 Sum Applied Linear Algebra (Math 4242)  
2009 Sum Calculus I (Math 1271)

### **Recitations led at the University of Minnesota**

2014 Spg CSE Linear Algebra and Differential Equations (Math 2373)  
2012 Fall Linear Algebra and Differential Equations (Math 2243)  
2010 Spg Calculus I (Math 1271)

2010	Spg	Honors Calculus II (Math 1572H)
2009	Fall	Honors Calculus I (Math 1571H)
2009	Spg	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Fall	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Spg	Honors Calculus IV (Math 2574H)
2007	Fall	Honors Calculus III (Math 2573H)

## Teaching Awards

2008	Apr	<i>John Bowers Excellence in Teaching Assistance Award</i> , University of Minnesota. “...honors an outstanding teaching assistant who has demonstrated exceptional interest and commitment to the teaching of IT [Institute of Technology] students.”
2008	Feb	<i>Institute of Technology TA Award</i> , University of Minnesota. “...one of three TA’s that was voted best TA in the Institute of Technology. The voting was done completely by students in the Institute of Technology.”